WE CLAIM:

1. A method of controlling the timing of the shift events of a dual clutch transmission, said method including the steps of:

sensing the current output speed of the driven member of the transmission;

determining the time required to complete each possible shift event within the transmission;

determining an output speed modification value for each possible shift event;

determining a modified shift point output speed for each possible shift event by summing the determined output speed modification value with a predetermined shift pattern output speed; and

commanding the shift when the current output speed reaches the determined modified shift point output speed.

2. A method as set forth in claim 1 wherein the method further includes the steps of:

continuously re-determining an output speed modification value for each possible shift event; and

continuously re-determining a modified shift point output speed for each possible shift event by summing the determined output speed modification value with a predetermined shift pattern output speed taken from a stored data base.

3. A method as set forth in claim 1 wherein the method further includes the steps of: determining the acceleration of the vehicle; and

determining an output speed modification value for each possible shift event based on the determined acceleration and the determined total time required to complete each possible shift.

4. A method as set forth in claim 1 wherein the step of determining the time required to complete each possible shift event within the transmission further includes the steps of:

determining the time required to perform a clutch changeover to the next higher and next lower gear;

determining if synchronization is needed;

determining the time required to complete the synchronization to the next higher and next lower gear if a synchronizer has not already been selected; and

determining the total time required to complete each shift possible in the transmission by summing the determined time required to perform a clutch changeover to the next higher and next lower gear with the determined time required to complete synchronization of the respective next higher or next lower gear.

5. A method as set forth in claim 4 wherein the step of determining the time required to perform a clutch changeover further includes the steps of:

determining the fill time of the on-coming clutch; and

determining the time required to changeover the torque transfer from the off-going clutch to the on-coming clutch.

6. A method as set forth in claim 4 wherein the step of determining the time required to complete the synchronization to the next higher and next lower gear further includes the steps of:

measuring the time required to complete a particular gear synchronization when a gear change is made and initially storing the value in a database;

measuring the time required to complete the same synchronization in the transmission is measured the next time the same synchronization is made;

averaging the newly measured synchronization time with the initially stored synchronization time to determine an average synchronization time;

storing the average synchronization time in the database in place of the initial value;

continuously re-determining the averaged synchronization time each time the synchronizer is engaged;

referencing the latest stored average synchronization time in the database to identify the value of the synchronization time when the value is required by the higher level method steps thereby providing a synchronization time that is historical and adaptive.

7. A method of controlling the timing of the shift events of a dual clutch transmission when the transmission is shifting to a higher gear, said method including the steps of:

sensing the current output speed of the driven member of the transmission;

determining the acceleration of the vehicle;

determining the time required to perform a clutch changeover from the current gear to the next higher gear;

determining the time required to complete the synchronization to the next higher gear;

determining the total time required to complete a shift to the next higher gear by summing the determined time required to perform a clutch changeover from current gear to the next higher gear with the determined time required to complete synchronization of next higher gear;

continuously re-determining an output speed modification value based on the determined acceleration and the determined total time required to complete a shift to the next higher gear;

determining the modified shift point output speed by summing the determined output speed modification value with a predetermined shift pattern output speed; and

commanding the shift to the next higher gear when the current output speed is greater than or equal to the determined modified shift point output speed.

8. A method as set forth in claim 7 wherein the step of determining the time required to perform a clutch changeover further includes the steps of:

determining the fill time of the on-coming clutch; and

determining the time required to changeover the torque transfer from the off-going clutch to the on-coming clutch.

9. A method as set forth in claim 8 wherein the step of determining the fill time includes identifying the known clutch fill times from a stored lookup table.

10. A method as set forth in claim 8 wherein the step of determining the time required to changeover the torque transfer from the off-going clutch to the on-coming clutch includes identifying the known clutch changeover times from a stored lookup table.

11. A method as set forth in claim 7 wherein the step of determining the time required to complete the synchronization of the next higher gear includes identifying the known synchronization time of each of the gears from a stored lookup table.

12. A method as set forth in claim 12 wherein the step of determining the time required to complete the synchronization to the next higher gear further includes the steps of:

measuring the time required to complete a particular gear synchronization when a gear change is made and initially storing the value in a database;

measuring the time required to complete the same synchronization in the transmission is measured the next time the same synchronization is made;

averaging the newly measured synchronization time with the initially stored synchronization time to determine an average synchronization time;

storing the average synchronization time in the database in place of the initial value;

continuously re-determining the averaged synchronization time each time the synchronizer is engaged;

referencing the latest stored average synchronization time in the database to identify the value of the synchronization time when the value is required by the higher level method steps thereby providing a synchronization time that is historical and adaptive.

13. A method as set forth in claim 7 wherein the step of determining a modified shift point output at which to command the shift to the next higher gear includes retrieving the predetermined shift pattern output speed from a lookup table.

14. A method of controlling the timing of the shift events of a dual clutch transmission when the transmission is shifting to a lower gear, said method including the steps of:

sensing the current output speed of the driven member of the transmission;

determining the acceleration of the vehicle;

determining the time required to perform a clutch changeover from the current gear to the next lower gear;

determining the time required to complete the synchronization of the next lower gear;

determining the total time required to complete a shift to the next lower gear by summing the time required to perform a clutch changeover from the current gear to the next lower gear with the time required to complete synchronization of the next lower gear;

continuously re-determining an output speed modification value based on the determined acceleration and the total time required to complete a shift to the next lower gear;

determining the modified shift point output speed by summing the determined output speed modification value with a predetermined shift pattern output speed; and

commanding the shift to the next lower gear when the current output speed is less than the determined modified shift point output speed.

15. A method as set forth in claim 14 wherein determining the time required to perform a clutch changeover further includes the steps of:

determining the fill time of the on-coming clutch; and

determining the time required to changeover the torque transfer from the off-going clutch to the on-coming clutch.

16. A method as set forth in claim 15 wherein the step of determining the fill time includes identifying the known clutch fill times from a stored lookup table.

17. A method as set forth in claim 15 wherein the step of determining the time required to changeover the torque transfer from the off-going clutch to the on-coming clutch includes identifying the known clutch changeover times from a stored lookup table.

18. A method as set forth in claim 14 wherein the step of determining the time required to complete the synchronization of the next lower gear to its input shaft includes identifying the known synchronization time of each of the gears to its input shaft from a stored lookup table.

19. A method as set forth in claim 14 wherein the step of determining the time required to complete the synchronization to the next lower gear further includes the steps of:

measuring the time required to complete a particular gear synchronization when a gear change is made and initially storing the value in a database;

measuring the time required to complete the same synchronization in the transmission is measured the next time the same synchronization is made;

averaging the newly measured synchronization time with the initially stored synchronization time to determine an average synchronization time;

storing the average synchronization time in the database in place of the initial value;

continuously re-determining the averaged synchronization time each time the synchronizer is engaged;

referencing the latest stored average synchronization time in the database to identify the value of the synchronization time when the value is required by the higher level method steps thereby providing a synchronization time that is historical and adaptive.

20. A method as set forth in claim 14 wherein the step of determining a modified shift point output at which to command the shift to the next lower gear includes retrieving the predetermined shift pattern output speed from a lookup table.